



Contribution ID: 66

Type: Poster

## Adsorption of Polysaccharides on Gut Bacteria

Most **dietary fibres** (DF) are polysaccharides that resist the hydrolytic digestive enzymes released in the human gastrointestinal tract (GIT). DF may, however, be fermented by our **gut microbiota**, a diverse and numerous group of microorganisms present in our large intestine. The gut microbiota and its **fermentation products** are vital in maintaining our overall health and well-being, from nutrient adsorption to disease prevention.<sup>1,2</sup>

Much work examining DF and microbiota focuses on health, its genetics, and the correlation between food intake, microbiota composition and metabolism. The chemical comprehension of the polysaccharides-bacteria interaction is extensive; <sup>3,4</sup> still, there is little physical understanding of topics such as adhesion between polysaccharides and bacteria or polysaccharide conformation on the bacteria surface.

Our work aims to create a mechanistic understanding of the **role of polysaccharides' molecular and physico-chemical properties on their adhesion to gut bacterial surfaces**. Adhesion mechanisms between bacteria and polysaccharides are studied using a range of advanced techniques such as flow cell, quartz crystal microbalance-dissipation (QCM-D), rheology and X-ray and neutron scattering experiments. Neutron-based techniques are vital for determining the nanostructural features of single biological molecules or large, multi-component macromolecular complexes. This project's outcomes will enhance our knowledge about the role of DF on gut microbiota, complementing current biochemistry and nutritional studies.

**Primary author:** Mr TIZZANINI, Giovanni (Chalmers University of Technology)

**Co-authors:** Mr KARLSSON, Jakob (Chalmers University of Technology); Prof. MARQUES, Tatiana (Örebro University); Prof. LOPEZ SANCHEZ, Patricia (University of Santiago de Compostela); Prof. NYPELÖ, Tiina (Aalto University, Chalmers University of Technology); Prof. STRÖM, Anna (Chalmers University of Technology)

**Presenter:** Mr TIZZANINI, Giovanni (Chalmers University of Technology)

**Session Classification:** Poster Session & Discussion with Wine and Cheese